Code No: N0321/R07 **Set No. 1**

IV B.Tech. I Semester Supplementary Examinations, February/March - 2011

DATABASE MANAGEMENT SYSTEMS

(Common to Mechanical Engineering and Electronics & Computer Engineering)

Time: 3 Hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. a) What is a Superkey? With an example, describe the difference between a candidate key and the primary key for a given relation?
   b) With an example, briefly describe Entity vs Relationship and Entity vs Attribute.

2. a) What are mapping constraints? Briefly describe mapping cardinalities.
   b) What is ternary relationship and what is aggregation? With an example ER diagram describe the usage of ternary relationship instead of aggregation.

3. a) Answer the following for the relational schema:
   Emp(eid: integer, ename: string, age: integer, salary: real)
   Works(eid: integer, did: integer, pcttime: integer)
   Dept(did: integer, dname: string, budget: real, managerid: integer)
      i. Give an example of a foreign key constraint that involves the Dept relation. What are the options for enforcing this constraint when a user attempts to delete a Dept tuple?
      ii. Write an SQL statement to add John Doe as an employee with eid = 101, age = 32 and salary = 15, 000.
      iii. Write an SQL statement to give every employee a 10 percent raise.
   b) What is unsafe calculus query? Describe, its importance to avoid such queries?

4. a) With an example, briefly describe the process to obtain a set of tuples as the result of a SQL Query?
   b) What are nested queries? How would you use the operators IN, EXISTS, UNIQUE, ANY, and ALL in writing nested queries?

5. a) When is decomposition is said to be dependency preserving? Why is this property useful? Explain.
   b) What is lossless join? What is dependency preservation? Briefly describe problems caused by redundancy.

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6. a) What is a shadow copy? Briefly describe the shadow copy technique for atomicity and durability.
   b) What is concurrency control component? With an example, briefly describe concurrent executions.

7. a) What is fine-grained locking? Briefly describe the phases of ARIES recovery method, when a system crash occurred.
   b) With a neat diagram, briefly describe the architecture of remote backup system.

8. What is a schedule? Define the concept of schedule for a set of concurrent transactions. Describe the process to test the serializability of a schedule.

Code No: N0321/R07 **Set No. 2**

IV B.Tech. I Semester Supplementary Examinations, February/March - 2011

DATABASE MANAGEMENT SYSTEMS

(Common to Mechanical Engineering and Electronics & Computer Engineering)

Time: 3 Hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. a) Describe briefly about the architecture of a DBMS.
   b) Briefly describe the responsibilities of DBA.

2. a) What is constraint? With an example, briefly describe key constraint and participation constraint.
   b) Briefly describe the ER model design process.

3. a) What is the difference between a candidate key and the primary key for a given relation? What is a super key? Give examples for each.
   b) Briefly describe the responsibilities of data base manager and administrator.

4. a) With examples and syntax, briefly describe SQL aggregate operators.
   b) What are range variables in SQL? With an example briefly describe range queries.

5. a) What is attribute closure? Briefly describe about Armstrong's axioms.
   b) What is dependency? Briefly describe about multivalued dependencies and Fourth Normal Form.

6. a) List the ACID properties. Explain the importance of each.
   b) What is conflict equivalent? Briefly describe view serializability?

7. a) What is buffer management? Briefly describe Log–record buffering and Database buffering.
   b) What is dirty page table? Briefly describe ARIES recovery method.

8. Describe in detail about hash-based index and tree-based index?

Code No: N0321/R07 **Set No. 3**

IV B.Tech. I Semester Supplementary Examinations, February/March - 2011

DATABASE MANAGEMENT SYSTEMS

(Common to Mechanical Engineering and Electronics & Computer Engineering)

Time: 3 Hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. a) Distinguish between logical and physical data independence.
   b) With an example, briefly describe the WAL Property.

2. a) What is class hierarchy? What are overlap constraints and covering constraints? What are the two basic reasons for identifying subclasses?
   b) What are keys? Briefly describe Entity sets and Relationship sets.

3. What SQL constraint enables the definition of a relation? What are integrity constraints? Define primary key constraint and foreign key constraint. How these constraints are expressed in SQL?

4. a) What are triggers? Explain the difference between triggers and integrity constraints, and describe when you would use triggers over integrity constraints and vice versa.
   b) What types of SQL constraints can be specified using the query language?

5. a) What is decomposition and how it addresses redundancy? What problems may be caused by the use of decomposition?
   b) What is functional dependency? Why some functional dependencies are called trivial? Describe.

6. a) What is serializability? Briefly describe anomolies due to interleaved execution.
   b) What is a lock? What is locking protocol? Briefly describe two phase locking protocol.

7. a) What is recovery? Briefly describe the ARIES data structure and other key features of ARIES.
   b) What is system crash? Briefly describe the purpose of checkpoint mechanism.

8. What is B+ tree index? What are the characteristics of B+ tree Index? With a neat diagram briefly describe B+ tree index structure.

Code No: N0321/R07 **Set No. 4**

IV B.Tech. I Semester Supplementary Examinations, February/March - 2011

DATABASE MANAGEMENT SYSTEMS

(Common to Mechanical Engineering and Electronics & Computer Engineering)

Time: 3 Hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks
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1. a) What is Data abstraction? Briefly describe the advantages of Data abstraction.
   b) What is a transaction? What guarantees does a DBMS offer with respect to transactions?

2. a) What is aggregation? Describe briefly about aggregations.
   b) What is Database schema? With an example, briefly describe relational algebra operations.

3. What is a view? What SQL constructs are used to modify the structure of tables and views? How do views support logical data independence? How are views used for security? How are queries on views evaluated?

4. a) What are null values? Are they supported in the relational model? How do they affect the meaning of queries?
   b) With an example, describe the differences between row-level and statement-level trigger?

5. a) What is BCNF? What is 3NF? Briefly describe the difference between 3NF and BCNF.
   b) What is functional dependency? How primary keys are related to FDs?

6. a) What is serialization? With an example, briefly describe about overwriting uncommitted data.
   b) What is concurrent execution? Briefly describe timestamp-ordering protocol.

7. a) What is log? Briefly describe the log based recovery.
   b) What is buffer management? Briefly describe Operating systems role in buffer management.

8. What is consistency? What is recoverability? What is intension shared and intension exclusive lock? Briefly describe multiple granularity locking protocol.